

## **RESPONSE**

This is in response to the Office Action dated October 8, 2008. Claims 1 – 23 are pending in this application. Claims 1- 23 have been amended. Claims 1, 11, 20 and 23 have been objected to for informalities. Accordingly, Claims 1, 11, 20 and 23 have been amended to correct such informalities.

**The rejection of Claims 20 and 21 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention is respectfully traversed.**

The Examiner takes the position that Claim 20 recites the limitation "...calculating an O per UOA-ID...." And there is insufficient antecedent basis for this limitation in the claim. The Examiner also takes the position that Claim 21 recites the limitation "...to be included into the population...." And there is insufficient antecedent basis for this limitation in the claim.

The Applicant submits that Claims 20 and 21 have been amended to make the claims more clear.

In view of the foregoing, the Applicant respectfully submits that the rejection of Claims 20 and 21 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter should be withdrawn.

**The rejection of Claims 1 – 8 and 26 under 35 U.S.C. 101 as being directed to non-statutory subject matter is respectfully traversed.**

The Examiner appears to take the position that the rejected claims do not qualify as a statutory process because they recite purely mental steps.

The Applicant respectfully submits that there is no Claim 26, accordingly, the Applicant submits that the rejection of Claim 26 is an error.

The Applicant submits that the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it nonstatutory subject matter. The proper inquiry under section 101 is not whether the process claims recites sufficient “physical steps” but rather whether the claim meets the machine or transformation test developed by the Courts.

With respect to Claim 1, the Applicant submits that Independent Claim 1 provides:

A method of improving resource allocation comprising the steps of:  
identifying at least one criteria;  
Identifying sets of information wherein each set of information includes a  
    UOA-ID, a CCT, a CATVAR and a VAR Value;  
grouping each UOA-ID into an appropriate Type;  
identifying a Start Time wherein each UOA-ID has met said at least one  
    criterion;  
forming at least one prospective or retrospective Cohort time segment for  
    each UOA-ID based on their Start Time;  
placing the UOA-ID into the appropriate time segment;  
calculating an eligibility score for each UOA-ID for each time segment;  
calculating an Eligible Adjusted Variable Value; and  
generating at least one Output Expression that can be subdivided by

each CATVAR.

Claim 1 there provides that an article comprises sets of data, each set having an Individual Unit of Analysis (UOA-ID), clock/date time (CCT), a Categorical Variable (CATVAR), and a Variable Value (VAR Value). The sets of data clearly represents physical and tangible objects. For example:

“The term ‘UOA-ID’ means the particular individual UOA entity involved in the study. For example, in the retail industry, the UOA can be, but are not limited to, an individual person, an individual product line, individual type of person, store type or a section of a store, office type, etc. For the health care industry for example, the UOA can be, but are not limited to, patients having a common diagnosis or condition, medical offices, hospital units, hospitals, etc. Preferably, the UOA will be the most basic analytic unit that can be supported by the known information. The ‘UOA-ID’ can include, but are not limited to, an individual product, an individual person, an individual store, office, etc. For the health care industry for example, the UOA-ID can include, but not limited to, an individual patient, medical office, hospital, or hospital unit.”

This raw data represents an article that is modified or transformed into a particular visual depiction which is patent-eligible. The transformation of the data to at least one Output Expression is central to the purpose of the claimed process. Further, as shown above, the sets of data are well defined and clearly represent physical and tangible objects which are modified (transformed) in such a way that the sets of data become a set of data that can be evaluated (such as by cohort time based on a start time). Further, the claimed process is limited to at least one Output Expression that represents specific physical objects and there is no danger that the scope of the claims would wholly pre-empt all uses of any fundamental principles or algorithm. Accordingly, the process of Claim 1 is directed to patentable subject matter.

In view of the foregoing, the Applicant respectfully submits that the rejection of Claims 1 – 8 as being directed to non-statutory subject matter should be withdrawn.

### **Summary of Applicant's Response to Claim Rejections**

The Examiner takes the position that with respect to reference Wong (U.S. Patent No. 5,976,082) that while some aspects of the defined time window are determined “arbitrarily” as in “B” can be selected somewhere in between, other aspects of the time window determination and inclusion in a cohort are based on specified criteria. Specifically, the time point A “is defined based on the data extraction protocol... and C is defined by the last say for which the member is still enrolled and eligible for the benefits.” Moreover, the Examiner takes the position that the definition of time point B in Wong is specifically amenable to “alternative definitions [that] may also be used.” Such time windows and time frames are based on information in data files such as “Date of first CHF diagnosis... Date of first CHF hospitalization... Date of first diabetes event...” Further, the establishment of relevant time frames based on membership criteria for inclusion in a cohort as the basis of statistical analyses is old and well-known, especially in the medical arts and sciences where the progression of disease, effectiveness of drug regimens and so forth are studied. With respect to Wong, the process defined uses claims records of raw data and transforms it into a data base, such as the universe of congestive heart failure patients (step 116). A set of events relevant to congestive heart failure are defined and new files are then created by reformatting the information into an event level format (step 120). Processing is then performed using a sliding time window and a plurality of variables which may be potential

predictors. The time window limits the time periods in which the events from the data base are considered. The time window is used to identify an analysis region and a prediction region where activity in the analysis region is used to predict some predetermined outcome in the prediction region (step 122). Based on the time window a model is developed based on the data contained in the data base using statistical techniques (step 124). Having developed the model, it can then be applied to updated claims data (step 132) or to other databases of congestive heart failure patients, such as to identify at risk patients.

The Applicant takes the position that the process of Wong is significantly different from the process of the subject invention. The subject invention “model” is descriptive and empirical; it is not a statistical projection. The subject invention provides the opportunity to improve resource allocation for business in two related ways: 1) empirical identification of opportunities; and 2) empirical assessment of impact of targeting the opportunities identified. These are described below:

1. The value of the empirical outputs are to improve resource allocation by subdividing the output expression by the factors (e.g. categorical variables --CATVAR or dichotomous variables-DV) and assessing the extent to which they differ from a) the original output expression; and/or b) with the stratification of the two values of a dichotomous variables (DV). By examining for example, the magnitude of the difference between DV=1 vs. DV=0 one may make a decision to focus on the sub-set of the population where DV=1, as it represents a good opportunity for success. In health care a DV could be, for example, adherence to a specific drug vs. non-adherence to a specific drug. This empirical evidence could then be used by a health care intervention team to select the sub-set of the target population that is non-adherent to this drug and implement an aggressive intervention.

**Thus the empirical model can be used to identify opportunities within a population of UOA's for an intervention designed to improve resource allocation.**

- 2. The value of empirical outputs, when sub-divided by categorical variables and/or dichotomous variables, can also be used to assess the impact of the resource allocation decision. Again, the impact assessment is not based on predictive statistics as in Wong, but on a comparison of the output expression of the sub-set that experience the intervention compared to a group that did not experience the intervention. It could also be used in comparative effectiveness research where one intervention is compared against another, with the start time for both groups defined in the same fashion to achieve equivalence (e.g. by matching or randomization). Thus the empirical model can be used to assess "Return on Resource Allocation" within a population of UOA's. This can be accomplished by comparing an intervention targeted by the results of the empirical "opportunity identification" model described above (by focusing on DV=1, for example) ; or by comparing two or more interventions against each other to assess the best allocation of resource empirically.**

**The rejection of Claims 1 - 23 under 35 U.S.C. 103(a) as being unpatentable over McCartney (PG-Pub 2003/0065534 A1) in view of Wong (U.S. Patent No. 5,976,082) is respectfully traversed.**

**McCartney discloses a method for determining resource consumption for a subject health**

care provider using resource consumption information from at least one other health care provider.

McCartney however does not include the specific and essential step of identifying a Start Time and forming at least one Cohort time segment based on that Start Time and then basing the entire data base structure on the unique use of calendar time to generate data based on cohort time with retrospective and prospective time segments pivoting around that start time. Thus, the process of the subject invention is nowhere taught or disclosed in McCartney.

As shown above, Wong also does not show forming at least one Cohort time segment based on the Start Time as defined in the subject application. While Wong provides that the Start Time is the first available date of enrollment and a time window is defined to provide a timeframe from which to judge whether events should be considered in subsequent processing, such a time window is not equivalent to a Cohort time segment.

As shown above, the process taught in Wong is profoundly different than the process taught in the subject invention. The Applicant refers to FIGs. 6A and 6B, column 13 lines 61 -67 and column 14, lines 1 - 34 of Wong. The Applicant submits that FIG. 6A shows that the process of Wong teaches using an events window to make a prediction window based on known data and using this to make a model that can be used to make predictions on new sets of data. This does not provide a teaching of a process of resource allocation. Further, point "B" operates as an Index Time ("Start Time"). As stated:

“The definition of the present instant B is important. In the subject invention, two basic definitions of B were devised in order to maximize the accuracy of the prediction model. Although, as would be understood by those skilled in the art, alternative definitions of B may also be used”

Thus, in Wong the “Index Time” or Start Time is not set or specifically defined by the criteria but is arbitrary assigned by the operator for making a prediction model. Points “A” and “C” (a point selected on how far out in time the prediction is to be made and calendar point “B” is arbitrary for use later in making predictions and uses statistical regression and progression models derived from data between point “A” and point “B” to predict what will happen between points “B” and “C” to create a prediction model. Point “B” of Wong is not set or defined as the time that an UOA-ID meets a set of predetermined conditions to be eligible for a defined population and therefore Wong does not apply Cohort time segments where each individual (UOA) can have a unique calendar time for point “B”, and therefore point “A” to point “B” (retrospective time segment) and point “B” to point “C” (prospective time segments). Thus, Wong teaches selecting a population with a CHF diagnoses and beginning and an end calendar time period. Then Wong teaches the selection of a point between the beginning and the end that is arbitrary (e.g. six months before the end date) and has nothing to do, for example, with the diagnoses. His mention of the “date of first CHF diagnosis” is only part of a long list of the elements of a source data set; it can be used in his prediction model, but is not a central operating principle of his model to determine Point “B.” Then within the time from the beginning to the arbitrary point between the beginning and the end, he seeks information important for statistical prediction of events between the beginning point and arbitrary mid-point; and the arbitrary mid-point and



the end point where the calendar time segments are the same for each person.

The present invention teaches a central, **non-arbitrary**, starting point (similar to point B in Wong) based on criteria (or criterion) and using that as a central point where both prospective and retrospective time segments can be generated for each UOA in what is called “cohort time.” Indeed, in the current invention, the point comparable for A and C in Wong is, in fact, arbitrary . Thus, what is arbitrary (point B) in Wong is non- arbitrary in Wilson, and what is non- arbitrary in Wong (points A and C) is arbitrary in the current invention

As described in the subject application, point “B” would be defined as the Start Time which is strictly defined as a date that the individual UOA-ID meets all of the eligibility criteria to be included into a population. Accordingly, the model of the subject application using Cohort Time and real data **not requiring the use of statistical regression and progression modeling**, instead it can clearly **use empirical data to examine the population trend both before and after the index calendar time start date of each person, now transformed into a common “cohort time” date for all persons in the population**. Thus, the process of the subject application is different than that of the cited references and there is no teaching or motivation in the cited references that would teach the combining the two references along the subject application to arrive at the claimed invention.

In view of the foregoing, the rejection of dependent Claims 1 23 under 35 U.S.C. 103(a) as

being unpatentable over McCartney in view of Wong should be withdrawn.

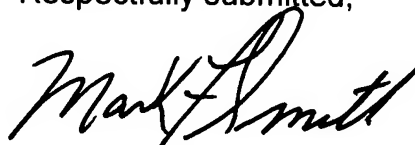
**SUMMARY:**

The Applicant respectfully submits that he has developed a new and novel method of improving resource allocation by business managers. The mere fact that one may select the particular elements or modify such elements disclosed in the prior art to arrive at the claimed invention does not support a claim for obviousness unless there is some motivation to modify the references. Such a motivation cannot be found in the Applicant's own specification, but must be shown by evidence that *is clear and particular*.

In view of the foregoing remarks, it is respectfully submitted that all of the Claims now pending are now allowable over the art of record. Reconsideration of all claims now in this application is respectfully requested.

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Respectfully submitted,

A handwritten signature in black ink, appearing to read "Mark F. Smith", written in a cursive style.

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